The following is a complete listing of the claims in this application, reflects all changes currently being made to the claims, and replaces all earlier versions and all earlier listings of the claims:

Claim 1. (currently amended): An information processing device for aiding control operations relating to controlling the position and orientation of a virtual object, said device comprising:

image-capturing means for capturing a real image in real space;

estimating means for estimating the position and orientation of the image capturing means;

virtual image generation means for generating a virtual image of a virtual object according to the position and orientation of said image capturing means;

superimposed means for superimposing the generated virtual image with the captured real image;

determination means for determining an input of a constraining shape or an operation of the virtual object;

inputting means for inputting three-dimensional position information of a plurality of positions inputted by moving an ~~operating~~ input unit in the real space by a user, the ~~operating~~ input unit being capable of measuring the position and orientation in the real space;

setting means for setting a constraining shape by using a shape generated based on the inputted three-dimensional position information in case of the input of the constraining shape; and

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operating means for performing an operation controlling the position and the orientation of the virtual object based on the constraining shape in accordance with a user's instructions in case of the operation of the virtual object.

Claim 2. (previously presented): An information processing device according to Claim 1, wherein the constraining shape is defined by polygons and the apexes of the polygons are at positions inputted by the user or the constraining shape is a plane passing through the positions inputted by the user.

Claim 3. (currently amended): An information processing device according to Claim 1, wherein said operating means performs at least one of the following operations in performing an operation controlling the position and orientation of the virtual object:

a translation operation for causing translational movement of the virtual object based on the constraining shape; and/or

a rotation operation for rotating the virtual object on an axis which is a normal vector at a plane where the constraining shape and the virtual object come into contact.

Claim 4. (canceled).

Claim 5. (currently amended): An information processing method for aiding control operations relating to controlling the position and orientation of a virtual object, said method comprising:

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an image capturing step of capturing a real image in real space by using an image capturing device;

an estimating step of estimating the position and orientation of the image capturing device;

a virtual image generation step of generating a virtual image of a virtual object according to the position and orientation of said image capturing device;

a superimposing step of superimposing the generated virtual image with the captured real image;

a determination step of determining an input of a constraining shape or an operation of the virtual object;

an inputting step of inputting three dimensional position information of a plurality of positions inputted by moving an ~~operating~~ input unit in the real space by a user, the ~~operating~~ input unit being capable of measuring the position and orientation in the real space;

a setting step of setting a constraining shape by using a shape generated based on the inputted three dimensional position information in case of the input of the constraining shape; and

an operating step for performing an operation controlling the position and the orientation of the virtual object based on the constraining shape in accordance with a user's instructions in case of the operation of the virtual object.

Claim 6. (currently amended): An information processing method according to Claim 5,

wherein said setting step ~~sets~~ <u>includes setting</u> a constraining shape defined by polygons, the apexes of the polygons being at positions inputted by the user in said inputting step or ~~sets~~ <u>setting</u> a constraining shape comprising a plane passing through the positions inputted by the user in said inputting step.

Claim 7. (previously presented): An information processing method according to Claim 6, wherein said operating step comprises the steps of:

causing translational movement of the virtual object based on the constraining shape; and

rotating the virtual object on an axis which is a normal vector at a plane where the constraining shape and the virtual object come into contact.

Claim 8. (previously presented): A computer program product comprising a computer readable medium storing computer program code for performing the information processing method according to Claim 5, wherein the information processing method is executed by a computer device.

Claim 9. (previously presented): A computer-readable recording medium, storing the computer program code according to Claim 8.

Claim 10. (currently amended): An information processing method for changing the position and orientation of a virtual object in mixed reality space obtained by combining a real space and a virtual space, said method comprising the steps of:

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an estimating step of estimating the position and orientation of an image

capturing means;

obtaining three-dimensional position information of a plurality of positions

designated by an ~~operating~~ input unit moved by a user in the real space, the ~~operating~~ input unit

being capable of measuring the position and orientation;

determining an input of a constraining shape or an operation of the virtual

object;

obtaining a constraining shape by using a shape generated based on the

obtained three-dimensional position information in case of the input of the constraining shape;

changing the position and orientation of the virtual object according to

instructions from the user, based on the obtained constraining shape as constraint condition in

case of the operation of the virtual object; and

combining an image of the virtual object generated according to the changed

position and orientation, and the real image, to obtain a mixed reality image.

Claim 11. (previously presented): An information processing method

according to Claim 10, further comprising the step of combining a virtual image indicating the

constraining shape with the real image.

Claim 12. (original): An information processing method according to Claim

10, wherein the constraining shape is a plane.

Claim 13. (currently amended): An information processing method according to Claim 10, wherein said changing step <u>includes</u> changing the position and orientation of the virtual object ~~is carried out~~ by changing the position and orientation of the operating unit.

Claim 14. (previously presented): A computer program product comprising a computer readable medium storing computer program code for performing the information processing method according to Claim 10, wherein the information processing method is executed by a computer device.

Claim 15. (previously presented): A computer-readable recording medium, storing the computer program code according to Claim 14.

Claim 16. (currently amended): An information processing device for aiding control operations relating to controlling the position and orientation of a virtual object, said device comprising:

an image- capturing unit configured to capture a real image in real space;

<u>an estimating unit for estimating the position and orientation of said image capturing unit;</u>

a virtual image generation unit configured to generate a virtual image of a virtual object according to the position and orientation of said image capturing unit;

a superimposing unit configured to superimpose the generated virtual image with the captured real image;

a determining unit configured to determine an input of a constraining shape or an operation of the virtual object;

an inputting unit configured to input three-dimensional position information of a plurality of positions inputted by moving an ~~operating~~ input unit in the real space by a user, the ~~operating~~ input unit capable of measuring the position and orientation in the real space;

a setting unit configured to set a constraining shape by using a shape generated based on the inputted three-dimensional position information in case of the input of the constraining shape; and

an operating unit configured to control the position and orientation of the virtual object based on the constraining shape in accordance with a user's instruction in case of the operation of the virtual object.

Claim 17. (previously presented): An information processing device according to Claim 16, wherein the constraining shape is defined by polygons and the apexes of the polygons are at positions inputted by the user or the constraining shape is a plane passing through the positions inputted by the user.

Claim 18. (currently amended): An information processing device according to Claim 16, wherein said operating unit performs at least one of the following operations in performing an operation controlling the position and orientation of the virtual object:

a translation operation for causing translational movement of the virtual object based on the constraining shape; and/or

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a rotation operation for rotating the virtual object on an axis which is a normal vector at a plane where the constraining shape and the virtual object come into contact.

Claim 19. (canceled).